

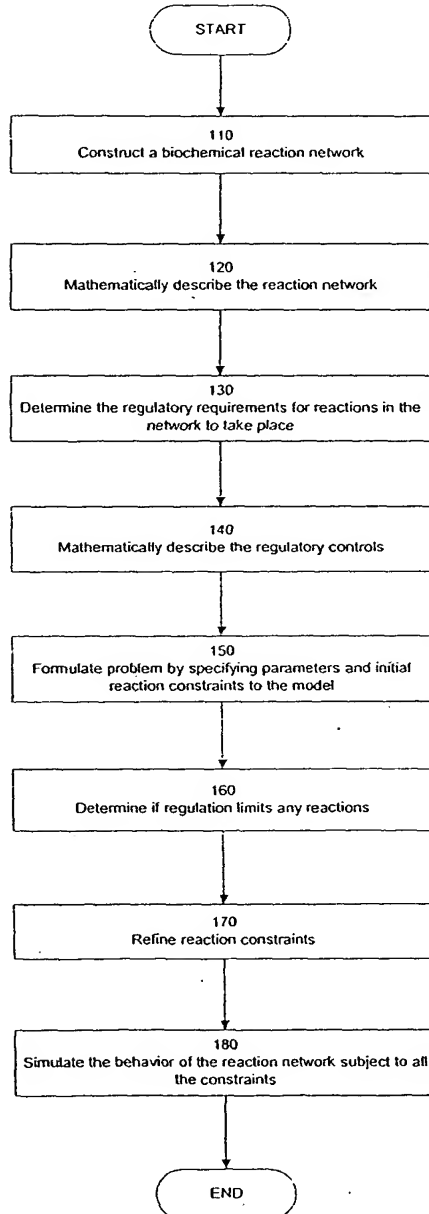
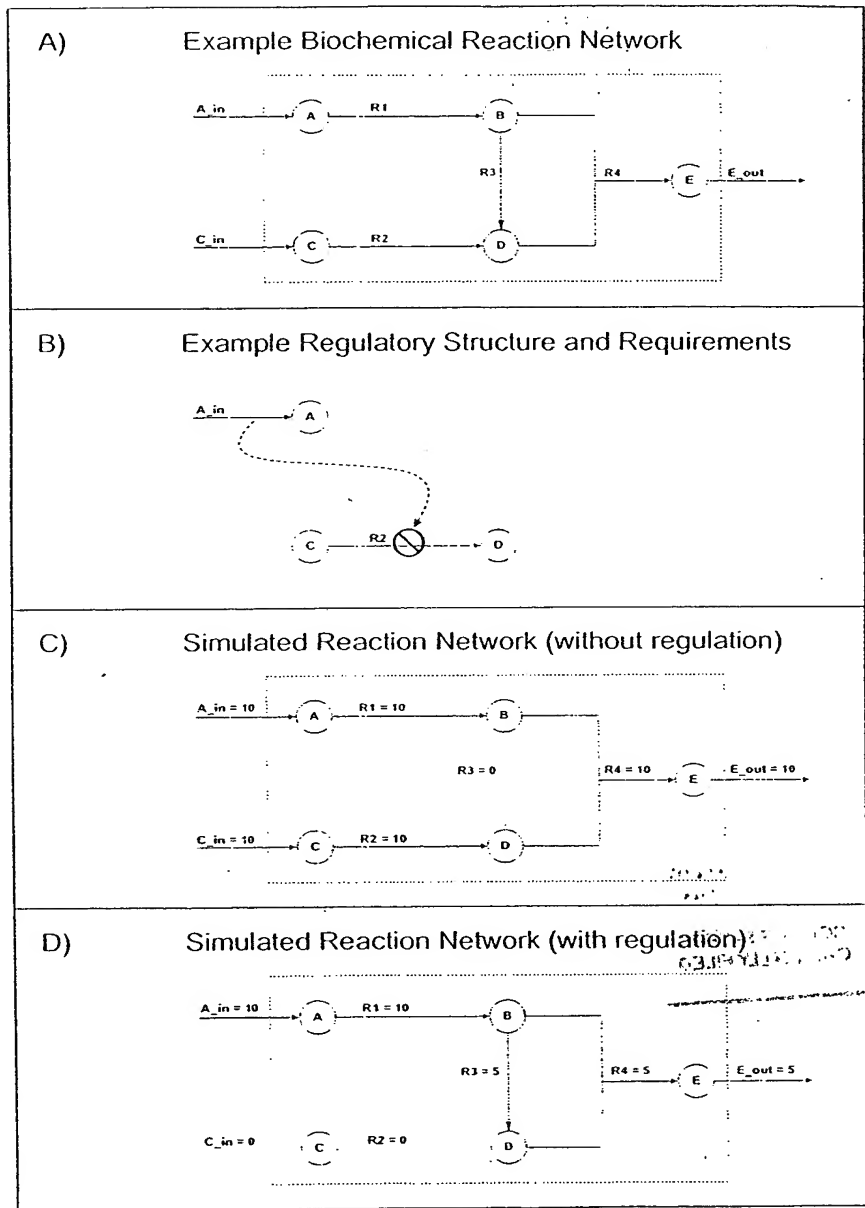
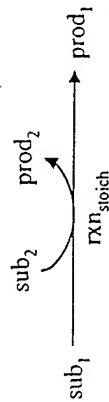
**Figure 1****General Process for Developing and Implementing a  
Regulated Biochemical Reaction Network Model**

Figure 2



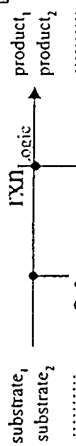
# Figure 3

Metabolic Model



If  $\text{rxn}_{\text{logic}} = 1$  then use Activity constraints  
 If  $\text{rxn}_{\text{logic}} = 0$  then use Inactivity constraints

Regulatory Model



Cofactor

Protein

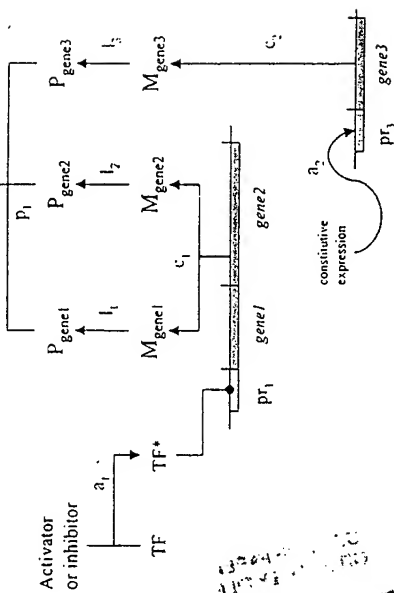
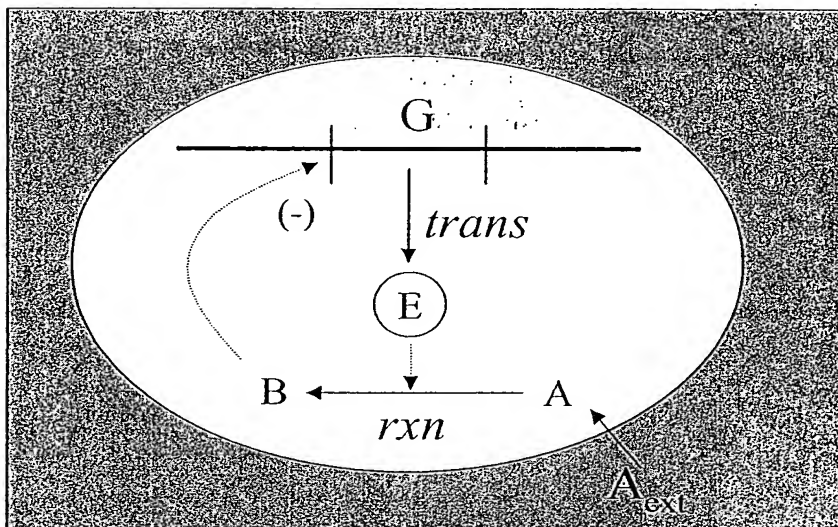


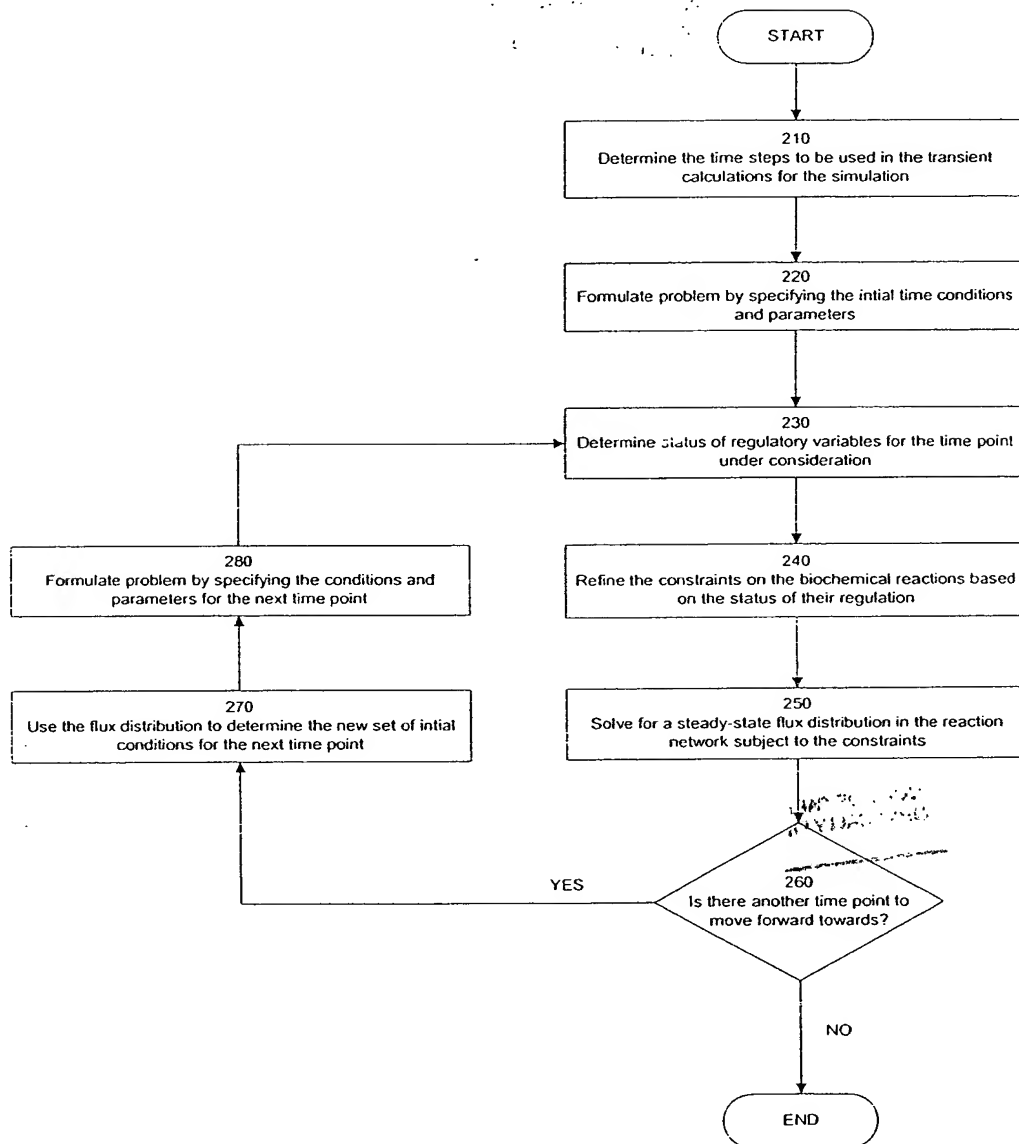
Figure 4



NOT FOR PUBLICATION  
 1008/441.052V02

**Figure 5**

**A Time-Dependent Implementation of a Regulated  
Biochemical Reaction Network Model**



**Figure 6**

**Process for Developing Genome Scale Regulated Models of Metabolism**

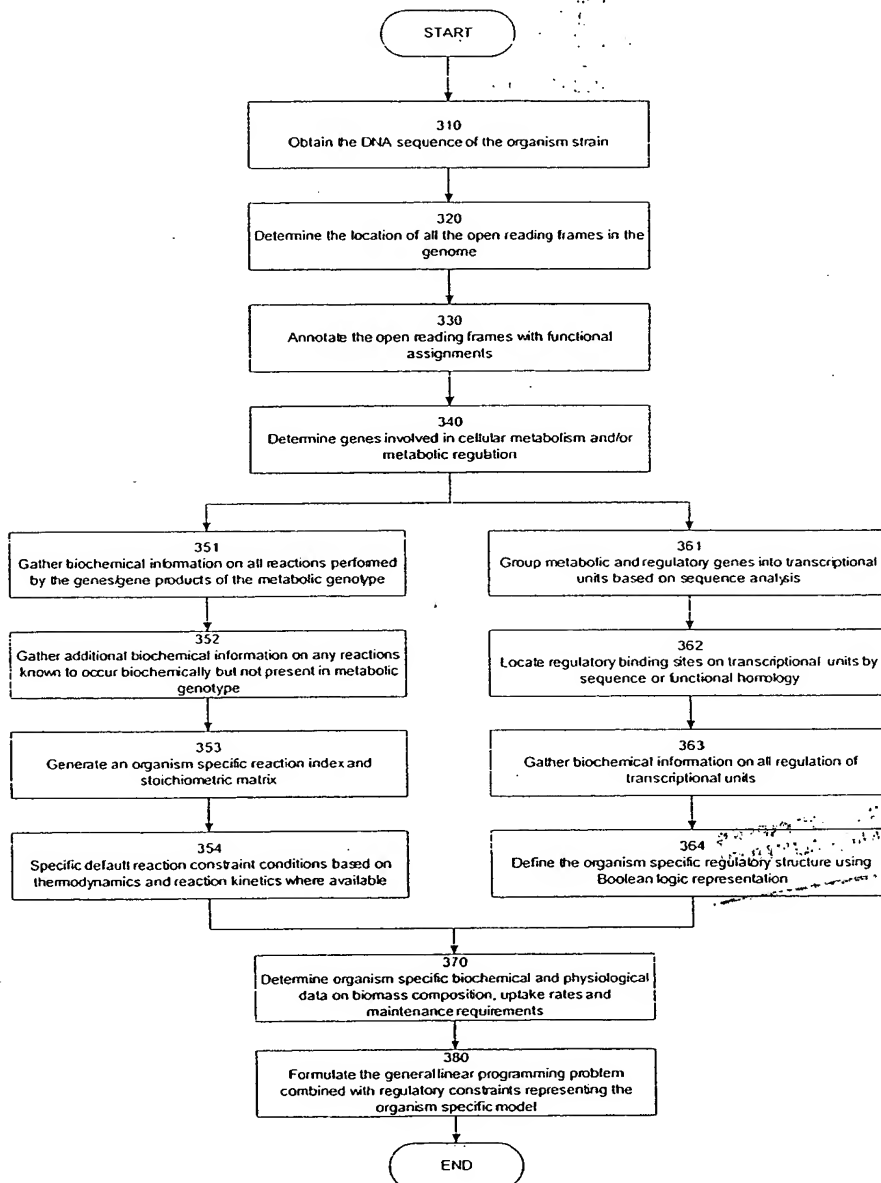
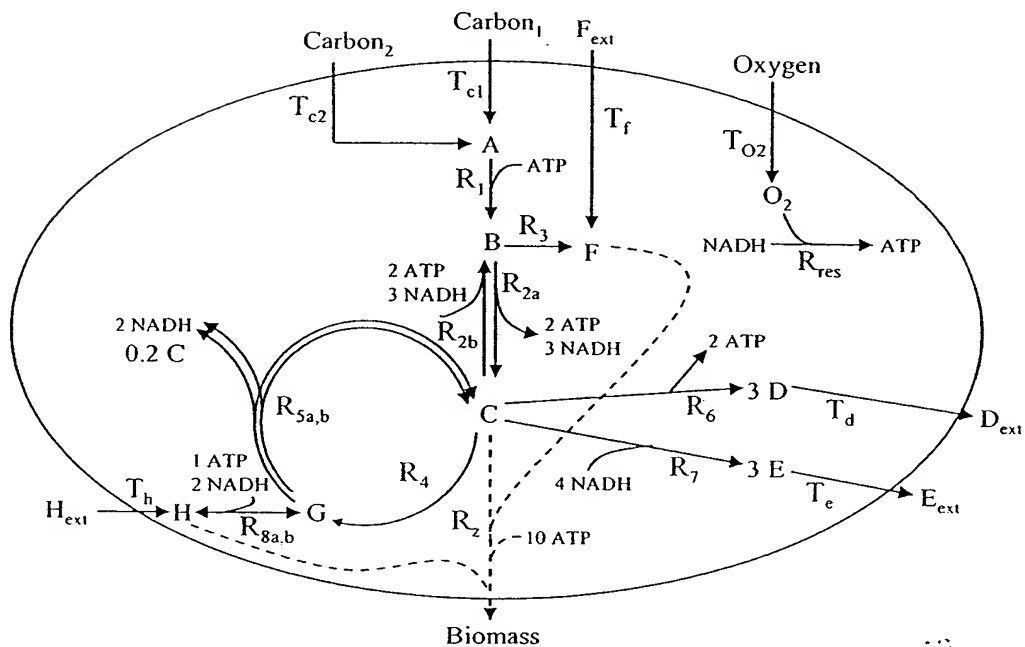
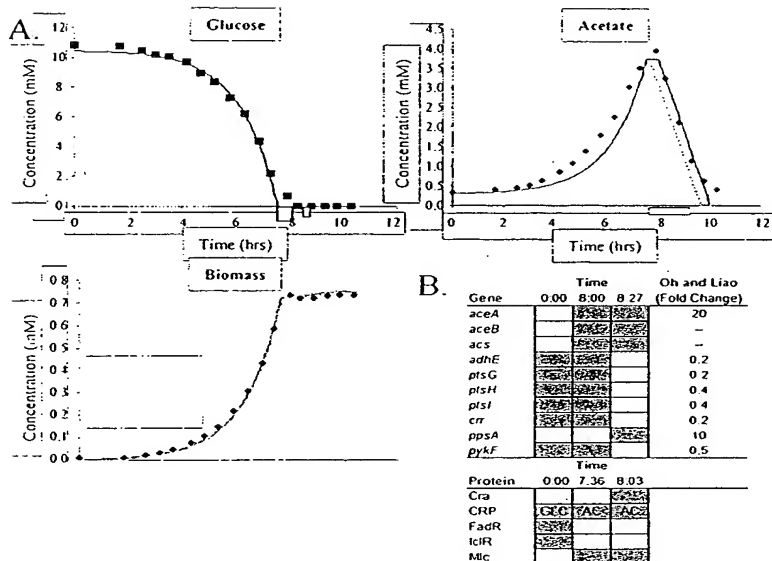


Figure 7



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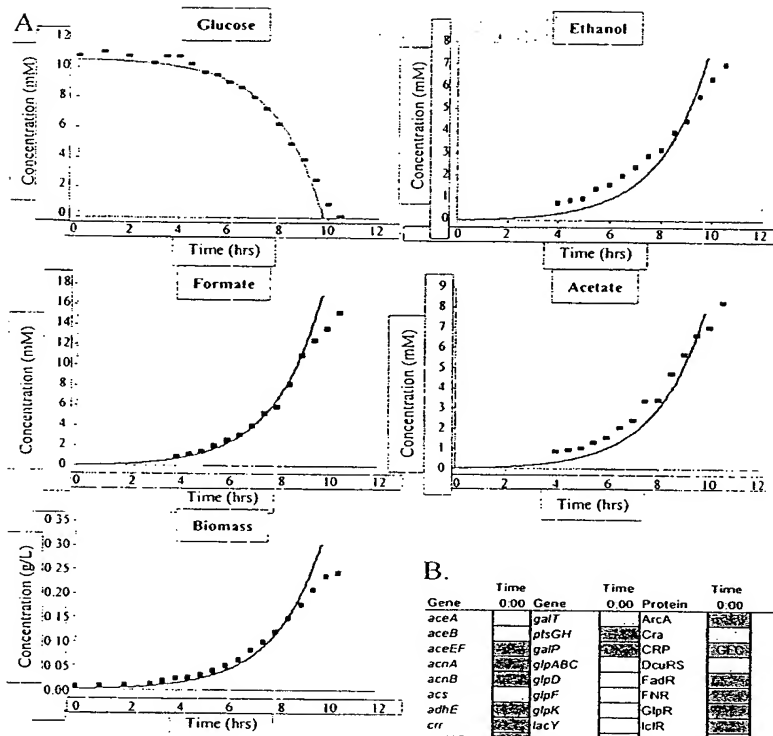
Figure 8



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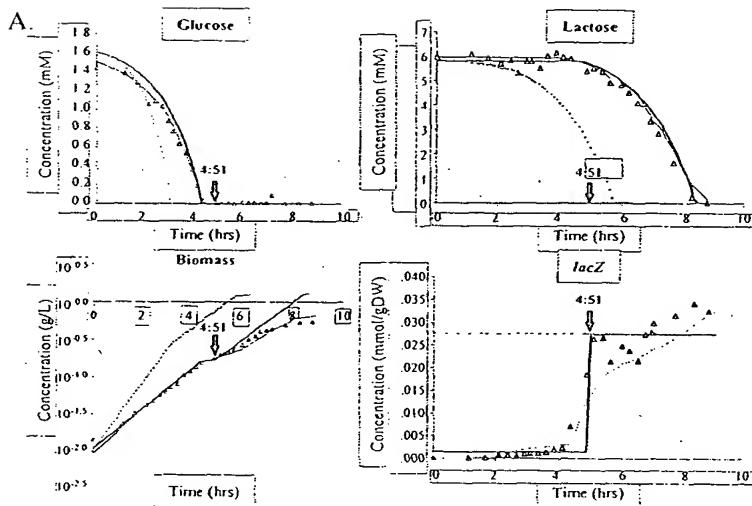


Figure 9

**B.**

Gene	Time	Gene	Time	Protein	Time
aceA	0.00	galT	0.00	Arca	0.00
aceB		plsGH		Cra	
aceEF		galP		CRP	
acnA		glpABC		DcuRS	
acnB		glpD		FadR	
acs		glpF		FNR	
adhE		glpK		GlpR	
cri		lacY		IciR	
cydAB		lacZ		Mic	
cyoABCD		lpdA		PdhR	
dctA		mdh		RbsR	
dcuB		ndh		RpiR	
dcuC		pRAB			
fdnGHI		pBCD			
focA		pgk			
hdABCD		ppsA			
lumA		pykF			
lumB		rbsK			
lumC		rbsABCD			
galE		rpiB			
galK		sdhABCD			
galM		sucAB			

Figure 10



B.

Gene	0:00	4:51
<i>galE</i>		+
<i>galK</i>		+
<i>galM</i>		+
<i>galT</i>		+
<i>lacY</i>		+
<i>lacZ</i>		+

Protein	0:00	4:35
CRP		+